We claim:

1. A microwaveable, food contact compatible, disposable, rigid and strong container comprising an extruded sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene and polypropylene polyethylene copolymer or a blend, and mixtures of these, mica, and pigment thermoformed by application of vacuum into the shape of a container; said container further exhibiting:

(a) a micronodular surface on at least one side of the container surface; and

(b) a melting point of no less than about 250°F;

said container being dimensionally stable and resistant to grease, sugar, and water at temperatures up to about 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware.

2. The microwaveable container of claim 1 wherein the polyolefin component of the extruded sheet is a propylene-ethylene copolymer or blend wherein the ethylene moiety comprises less than ten mole percent of the total copolymer.

3. The container of claim 1 wherein the polypropylene in the sheet is isotactic polypropylene homopolymer having a melt flow rate of about 0.1 to about 5.0.

4. The container of claim 1 wherein the coupling agent comprises ~~the~~ maleic anhydride modified polypropylene or acrylic modified polypropylene in a concentration of about 0.5 to about 3 weight percent based on the total weight of the container.

5. The container of claim 1 wherein the pigment is titanium dioxide.

6. The container of claim 1 wherein the pigment is carbon black.

7. The container of claim 1 wherein the container exhibits a melting point of about 250 to about 330°F.

8. The container of ~~claim 2 or~~ claim 3 wherein the polypropylene moiety or propylene-ethylene copolymer or blend comprises about 40 to 90 percent by weight, the mica comprises about 7 to 59 percent by weight, and the pigment comprises about 0.5 to 8 percent by weight.

9. The container of claim 8 wherein the pigment comprises about 2.5 to 6.5 percent by weight.

10. The container of claim 8 wherein the mica content comprises about 20 to 35 weight percent.

11. A microwaveable, food contact compatible, disposable, rigid and strong container comprising an extruded sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and mixtures of these and a coupling agent for promoting adherence between the polyolefin and platy inorganic mineral thermoformed by application of vacuum into the shape of a container; said container exhibiting:

(a) a micronodular surface on at least one side; and

(b) a melting point of no less than about 250°F; and

(c) a basis weight of at least 130 lbs. per 3000 square foot ream;

said container being dimensionally stable and resistant to grease, sugar, and water at temperatures up to at least 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware.

12. A microwaveable, food contact compatible, disposable, rigid and strong container comprising an extruded sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and mixtures of these, mica, a coupling agent for promoting adherence between the polyolefin and mica, and pigment, formed or thermoformed into the shape of a container; said container exhibiting:

(a) a basis weight of at least 130 pounds per 3000 square foot ream; and

(b) a melting point of no less than about 250°F;

said container being dimensionally stable and resistant to grease, sugar, and water at temperatures up to at least 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware.

13. The container of claim 12 wherein the polyolefin component of the extruded sheet is a polypropylene or a polypropylene polyethylene copolymer or blend wherein the ethylene moiety comprises less than ten mole percent of the total copolymer.

14. The container of claim 13 wherein the mica content is about 20 to 40 weight percent.

15. A microwaveable, food contact compatible, disposable, rigid and strong container comprising an extruded sheet consisting essentially of a polypropylene or polypropylene polyethylene copolymer or blend, and mixtures of these, mica, and a coupling agent for promoting adherence between the polypropylene or polypropylene polyethylene copolymer or blend and mica, thermoformed by application of vacuum into the shape of a container; said container exhibiting:

(a) a micronodular surface on at least one side; and

(b) a melting point of no less than about 250°F; and

(c) a basis weight of at least 130 lbs. per 3000 square foot ream;

said container being dimensionally stable and resistant to grease, sugar, and water at temperatures up to at least 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware.

16. A microwaveable, food contact compatible, disposable, rigid and strong tray comprising an extruded sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and mixtures of these, mica, a coupling agent for promoting adherence between the polyolefin and mica, and pigment, formed or thermoformed into the shape of a tray; said tray exhibiting:

(a) a basis weight of at least 130 pounds per 3000 square foot ream; and

(b) a melting point of no less than about 250°F;

said tray being dimensionally stable and resistant to grease, sugar, and water at temperatures up to at least 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware.

17. A microwaveable, food contact compatible, disposable, rigid and strong bowl comprising an extruded sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and mixtures of these, mica, a coupling agent, a pigment for promoting adherence between the polyolefin and mica, and pigment formed or thermoformed into the shape of a bowl; said bowl exhibiting:

(a) a micronodular surface on one side; and

(b) a melting point of no less than about 250°F;

said bowl being dimensionally stable and resistant to grease, sugar, and water at temperatures up to at least 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware.

18. A microwaveable, food contact compatible, disposable, rigid and strong plate comprising an extruded sheet consisting essentially of an admixture of a polypropylene or polypropylene polyethylene copolymer or blend, mica, a coupling agent for promoting adherence between the polypropylene or polypropylene polyethylene copolymer or blend, mica, and pigment, formed, thermoformed, or thermoformed by application of vacuum into the shape of a plate; said plate exhibiting:

(a) a micronodular surface on at least one side;

(b) a melting point of no less than about 250°F; and

(c) thickness uniformity characterized by a thickness coefficient variation of less than five percent; said plate being dimensionally stable and resistant to grease, sugar, and water at temperatures up to at least 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware.

19. The microwaveable plate of claim 18 wherein the extruded sheet is a polypropylene or a propylene-ethylene copolymer or blend and mixtures of these wherein the ethylene moiety comprises less than ten mole percent of the total copolymer.

20. The plate of claim 18 having a diameter in the range of about 8.75 inches to 11 inches.

21. The plate of claim 18 having a diameter of 10.25 inches.

22. The plate of claim 18 wherein the coupling agent comprises the maleic anhydride or acrylic modified polypropylene.

23. The plate of claim 18 wherein the pigment is titanium dioxide.

24. The plate of claim 18 wherein the pigment is carbon black.

25. The plate of claim 18 wherein the plate exhibits a melting point of about 250 to about 330°F.

26. The plate of claim 18 wherein the polypropylene moiety comprises about 40 to 90 percent by weight, the mica comprises about 7 to 59 percent by weight, and the pigment comprises about 0.5 to 8 percent by weight.

27. The plate of claim 18 wherein the mica comprises about 20 to 40 weight percent and the pigment comprises 2.5 to 6.5 weight percent.

28. The plate of claim 27 wherein at a polyolefin basis weight of at least 175 pounds per 3000 square foot ream, the plate exhibits a SSI rigidity of at least 250 grams per 0.5 inch.

29. The plate of claim 28 wherein at the basis weight of at least about 280 pounds per 3000 square foot ream, the plate exhibits a SSI rigidity of at least 400 grams per 0.5 inch.

30. A microwaveable, food contact compatible, disposable, rigid and strong container comprising an extruded sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and a mixture of these, mica, a coupling agent for promoting adherence between the polyolefin and mica, and pigment, formed, thermoformed, or

thermoformed by application of vacuum into the shape of a container; said container exhibiting:

(a) a micronodular surface on at least one side; and

(b) a melting point of no less than about 250°F;

said container being dimensionally stable and resistant to grease, sugar, and water at temperatures up to about 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware, the container including a base portion and a lid portion comprising:

I (a) a bottom;

(b) an upwardly extending peripheral wall joined to said bottom, said upwardly extending peripheral wall having an inwardly tapering frusto-conical base seal area formed therein; and

(c) a downwardly and outwardly extending brim joined to said upwardly extending peripheral wall, said brim having an undercut secondary seal ridge formed therein; and a unitary lid comprising:

II (a) a top joined to;

(b) a downwardly extending peripheral wall to;

(c) an upwardly extending wall having a frusto-conical lid seal area formed therein, said frusto-conical lid seal area being mateable with the frusto-conical base seal area;

(d) a downwardly extending wall having a secondary seal furrow mateable with said secondary seal ridge; and

(e) resilient lid realignment means located between said secondary seal furrow and said frusto-conical lid seal area for simultaneously urging said frusto-conical base seal area into close engagement with said frusto-conical lid seal area while urging said secondary seal ridge into engagement with said secondary seal furrow.

31. The microwaveable container of claim 30 wherein the polyolefin component of the extruded sheet is a polypropylene or propylene-ethylene copolymer or blend wherein the ethylene moiety comprises less than ten mole percent of the total copolymer.

32. The container of claim 30 wherein the coupling agent is selected from the maleic anhydride modified polypropylene and acrylic modified polypropylene.

33. The container of claim 30 wherein the pigment is titanium dioxide.

34. The container of claim 30 wherein the pigment is carbon black.

35. The container of claim 30 wherein the container exhibits a melting point of about 250 to about 330°F.

36. The container of claim 30 wherein the polyolefin moiety comprises about 40 to 80 percent by weight, the mica comprises about 19 to 59 percent by weight, and the pigment comprises about 0.5 to 8 percent by weight and wherein the container has a basis weight of about 130 pounds to 950 pounds per 3000 square foot ream,

37. The container of claim 36 wherein mica comprises about 20 to 40 percent by weight and the pigment comprises 2.5 to 6.5 by weight.

38. The container of claim 1 in the form of a cup.

39. The container of claim 1 in the form of a bowl.

40. The container of claim 1 in the form of a tray.

41. The container of claim 1 in the form of a bucket.

42. The container of claim 1 in the form of a soufflé dish.

43. A microwaveable, food contact compatible, disposable, rigid and strong lid comprising an extruded sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, or mixtures of these, mica, and pigment, formed, thermoformed, or thermoformed by application of vacuum into the shape of a lid; said lid exhibiting:

(a) a micronodular surface on at least one side; and

(b) a melting point of no less than about 250°F;

said lid being dimensionally stable and resistant to grease, sugar, and water at temperatures up to about 220°F.

44. The lid of claim 43 wherein the micronodular surface of the lid is not in contact with the food.

45. A microwaveable, food contact compatible, disposable, rigid and strong extruded sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and mixtures of these, mica, a coupling agent for promoting adherence between the polyolefin and mica, and pigment thermoformed by application of vacuum into the shape of a container; said sheet exhibiting a softening point of no less than about 250°F; said sheet being dimensionally stable and resistant to grease, sugar, and water at temperatures of about 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware; said sheet being capable of forming a micronodular surface on one side when subjected to vacuum forming.

46. The sheet of claim 45 wherein the polyolefin component of the extruded sheet is a polypropylene ethylene copolymer or blend wherein the ethylene content is not more than ten mole percent.

47. A microwaveable, food contact compatible, disposable, rigid and strong, extruded and matted on one side, sheet consisting essentially of an admixture of a polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and mixtures of these, mica, a coupling agent for promoting adherence between the polyolefin and mica, and pigment thermoformed by application of vacuum into the shape of a container; said sheet exhibiting (a) at least one matted surface, and (b) a softening point of no less than about 250°F; said sheet being dimensionally stable and resistant to grease, sugar, and water at temperatures of about 220°F and of sufficient toughness to be resistant to cutting by serrated polystyrene flatware; said sheet being capable of forming a micronodular surface on one side when subjected to vacuum forming.

48. The sheet of claim 47 wherein the polyolefin component of the sheet is a polypropylene ethylene copolymer or blend, and mixtures of these wherein the polyethylene content does not exceed about ten mole percent.

49. A process for the manufacture of the sheet of claim 45 comprising the step of mixing the polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and mixtures of these, mica, coupling agent, and pigment, and converting the mixture at a temperature of about 380°F to 480°F into a sheet and recovering the sheet having a caliper in the range of about 5 to 50 units.

50. A process for the manufacture of the container of claim 1 comprising the steps of (a) heat softening the sheet of claim 45 at a temperature of at least 260°F; and (b) vacuum forming the container in a mold controlled to form a micronodular surface of the container not in contact with the mold surface.

51. The process of claim 50 wherein the heat softening of the sheet is conducted at a temperature of at least 330°F.

52. A process for the manufacture of the plate of claim 18 comprising the steps of (a) heat softening the sheet of claim 45 at a temperature of at least 260°F; (b) vacuum forming the container in a mold controlled to form a micronodular surface of the plate not in contact with the mold surface.

53. The sheet of claim 45 having a basis weight of about 200-950 lbs. per 3000 square foot ream.

54. The sheet of claim 45 wherein the mica flake aspect ratio is about 30 to 300 at a particle size of about 50 to about 500 microns.

55. A process for the manufacture of the sheet of claim 45 comprising the step of mixing the polyolefin selected from the group consisting of polypropylene, polypropylene polyethylene copolymer or blend, and mixtures of these, mica, coupling agent, and pigment, and converting the mixture at a temperature of about 380°F to 480°F into a sheet, matting the sheet on one side, and recovering the sheet having a caliper in the range of about 5 to 50 units and exhibiting a matted surface on one side.

56. A process for the manufacture of the container of claim 1 comprising the steps of (a) heat softening the sheet of claim 45 or claim 47 at a temperature of at least

260°F; and (b) vacuum forming the container in a mold controlled to form a micronodular surface of the container not in contact with the mold surface.

57. The process of claim 55 wherein the heat softening of the sheet is conducted at a temperature of at least 330°F.

58. The sheet of claim 45 or claim 47 wherein the mica flake aspect ratio is about 80 to 120 at a particle size of about 50 to 500 microns.

59. The plate of claim 18 having a caliper coefficient of variation in the flange of less than 5.

60. The plate of claim 20 or claim 21 having a SSI plate rigidity value of at least 250 grams per 0.5 inches at a basis weight of 170 lbs. per 3000 square foot ream.

61. The plate of claim 18 having a Parker Roughness of at least about 10 microns.

62. The plate of claim 61 having a caliper coefficient of variation in the flange of less than about 3.

63. The plate of claim 18 having a gloss surface below about 30 gloss units on the side in contact with food as measured by TAPPI Standard Method T-480-OM 92.

64. The plate of claim 18 having a caliper coefficient of variation in the sidewall of less than about 7.

65. The plate of claim 64 having a caliper coefficient of variation in the sidewall of less than about 5.

66. A process for forming a microwaveable, food contact compatible, disposable, rigid and strong, mica-filled polyolefin container wherein the polyolefin is selected from the

group consisting of polypropylene and polypropylene polyethylene copolymer or blend, and a mixture of these comprising the steps of:

(a) forming an extrudable admixture of the polyolefin resin and mica;

(b) extruding said extrudable admixture of the polyolefin resin and mica at elevated temperature;

(c) passing the resulting extruded admixture of the polyolefin resin and mica through a multiple roll stack of rolls, at least one roll of said stack having a matte finish;

(d) passing said extruded admixture of the polyolefin resin and mica at least partially around said roll having a matte finish;

(e) controlling the speed of said extrusion process, the size, temperature and configuration of said roll stack such that the surface of said extruded admixture of the polyolefin resin and mica in contact with said matte roll has a matted structure;

(f) thermoforming said extruded admixture of the polyolefin, resin, and mica; and

(g) recovering a container having a micronodular surface and a coarse surface.

67. The process of claim 66 wherein the container is a plate.

68. A process for forming a microwaveable, food contact compatible, disposable, rigid and strong, mica-filled polyolefin container selected from the group consisting of polypropylene and polypropylene polyethylene copolymer or blend, and a mixture of these comprising the steps of:

(a) forming an extrudable admixture of the polyolefin resin and mica;

(b) extruding said extrudable admixture of the polyolefin resin and mica at elevated temperature;

(c) passing the resulting extruded admixture of the polyolefin resin and mica through a multiple roll stack, at least one roll of said stack having a matte finish;

(d) passing said extruded admixture of the polyolefin resin and mica at least partially around said roll having a matte finish;

(e) controlling the speed of said extrusion process, the size, temperature and configuration of said roll stack such that the surface of said extruded admixture of the polyolefin resin and mica not in contact with said matte roll has a coarse-grained structure;

(f) thermoforming said extruded admixture of the polyolefin, resin, and mica; and

(g) recovering a container having a micronodular surface and a rough surface and exhibiting a melting point of no less than 250°F, said container being dimensionally stable and resistant to grease, sugar, and water at temperatures up to about 220°F and having sufficient toughness to be resistant to cutting by serrated flatware.

69. The process of claim 68 wherein the coarse-grained structure of the surface of said extruded admixture of the polyolefin resin and mica not in contact with said matte roll is formed by transversing the extruded admixture of the polyolefin resin and mica through a curvilinear path and at least partially solidifying the surface of said extruded admixture of polyolefin resin and mica not contacting said matte roll while that surface is in tension relative to the surface contacting said matte roll.

70. The process of claim 68 wherein the container is a plate.

71. The process of claim 68 wherein the container is a cup.

72. The process of claim 68 wherein the container is a bowl.

73. The process of claim 68 wherein the container is a tray.

74. The process of claim 68 wherein the container is a bucket.

75. The process of claim 68 wherein the container is a soufflé dish.

76. A container prepared according to the process of claim 68.

77. A plate prepared according to the process of claim 68.

78. A cup prepared according to the process of claim 68.

79. A bowl prepared according to the process of claim 68.

80. A tray prepared according to the process of claim 68.

81. A bucket prepared according to the process of claim 68.

82. A soufflé dish prepared according to the process of claim 68.

83. The process of claim 66 or claim 68 wherein the thermoforming is conducted at a temperature of about 260°F to 310°F.

84. The process of claim 83 wherein the thermoforming is conducted a temperature of about 270°F to 290°F.

85. A process for forming a mica-filled polyolefin extruded sheet wherein the polyolefin is selected from the group consisting of polypropylene and polypropylene polyethylene copolymer or blend, and a mixture of these comprising the steps of:

(a) forming an extrudable admixture of the polyolefin resin and mica;

(b) extruding said extrudable admixture of the polyolefin resin and mica at elevated temperature;

(c) passing the resulting extruded admixture of the polyolefin resin and mica through a multiple roll stack, at least one roll of said roll stack having a matte finish;

(d) passing said extruded admixture of the polyolefin resin and mica at least partially around said roll having a matte finish;

(e) controlling the speed of said extrusion process, the size temperature and configuration of said roll stack such that the surface of said extruded admixture of the polyolefin resin and mica not in contact with said matte roll has a matted structure; and

(f) recovering a sheet comprising polyolefin and mica moieties, said sheet having a matted surface and a rough surface.

86. The process of claim 85 wherein the coarse-grained structure of the surface of said extruded admixture of the polyolefin resin and mica not in contact with said matte roll is formed by traversing the extruded admixture of the polyolefin resin and mica through a curvilinear path and at least partially solidifying the surface of said extruded admixture of polyolefin resin and mica not contacting said matte roll while that surface is in tension relative to the surface contacting said matte roll.

87. A process for forming a mica-filled polypropylene or polypropylene polyethylene copolymer or blend extruded sheet comprising the steps of:

(a) forming an extrudable admixture of polypropylene or polypropylene polyethylene copolymer or blend resin and mica;

(b) extruding said extrudable admixture of polypropylene or polypropylene polyethylene copolymer or blend resin and mica at elevated temperature;

(c) passing the resulting extruded admixture of polypropylene, polypropylene polyethylene copolymer, or blend resin and mica through a multiple roll stack, at least one roll of said stack having a matte finish;

(d) passing said extruded admixture of polypropylene, polypropylene polyethylene copolymer, or blend resin and mica at least partially around said roll having a matte finish; and

(e) controlling the speed of said extrusion process, the size temperature and configuration of said roll stack such that the surface of said extruded admixture of polypropylene, polypropylene polyethylene copolymer, or blend resin and mica in contact with said matte roll has a matted structure; and

(f) recovering an extruded sheet comprising a polypropylene or polypropylene polyethylene copolymer or blend and mica moiety, said sheet having a matted surface.

88. The extruded sheet prepared according to the process of claim 85 or claim 87.